

monitoring the rate of change in the thickness of said thin film attached to said surface within said process chamber; and

controlling the introducing conditions of the process gas into the process chamber in changing the circulating ratio of the process gas into the process chamber so as to allow the rate of change in the thickness of said thin film to form a regulated value;

wherein said regulated value is a rate of change in the thickness of the thin film obtained before changing the circulating ratio.

23. (Amended) The plasma processing method according to claim 19, wherein said process gas introduced into the process chamber contains a gaseous component having C and F; a silicon oxide film that is processed by an etching is attached to said surface within said process chamber; and said property value represents the intensity of the light emission from  $CF_2$  radicals.

26. (Amended) A plasma processing method, in which a process gas is introduced into an evacuated process chamber so as to process a thin film on the surface of a substrate, comprising:

introducing again at least a part of the process gas exhausted from said process chamber into said process chamber;

monitoring the rate of change in the thickness of a thin film formed on the surface of said substrate within said process chamber; and

controlling the introducing conditions of the process gas into the process chamber in changing the circulating ratio of the process gas introduced again into the

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